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This study, conducted at Loyola University, Chicago, tested the effectiveness of two short courses on the performance of student teachers in high school English instruction. Eleven student teachers, during 1965-66, formed the control group which followed the usual teacher training syllabus. Eleven others, during 1966-67, formed an experimental group which reviewed the fundamental principles of a high school speech course, focusing on those elements particularly applicable to teaching high school English, and which participated in a course on the art of questioning in addition to regular course work. Students in both groups were asked to tape record four (one-half hour) lessons in the teaching of one or more literary selections. These tapes were analyzed for teachers' performance in regard to speech and the art of questioning. Statistical analyses of the results revealed no significant differences in the performance of the two groups. Possible explanations for these results may be (1) the complexity of the teaching situation for beginning teachers, (2) insufficient time and opportunity for preparing student teachers in the techniques within the time allotted, and (3) the fact that developing the art of questioning as well as the poise that is needed for speech proficiency on the part of the teacher demands prolonged practice. (Author/LH)

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ILLINOIS STATE-WIDE CURRICULUM STUDY CENTER
IN THE PREPARATION OF SECONDARY SCHOOL
ENGLISH TEACHERS (ISCPET)

An Experimental Study of the Effects of Short Courses in Speech and in the Art of Questioning upon the Performance of Student Teachers in Secondary English Instruction

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Chicago, Illinois

April 1969

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TABLE OF CONTENTS

		Page
LIST OF TABLES		iii
I.	SUMMARY	1
II.	INTRODUCTION	2
III.	METHOD	4
	A. The Nature of the Study	4
	B. The Subjects	4
	C. Experimental Action	5
	D. The Course in the Art of Questioning	6
	E. The Speech Course	10
	F. Concluding Activities	10
IV.	RESULTS AND DISCUSSION	13
V.	CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS	21
VI.	REFERENCES	23

LIST OF TABLES

Page

Table 1: Tabulation of the Kinds of Questions Used by Students of the Control Group . . . 14

Table 2: Tabulation of the Kinds of Questions Used by Students of the Experimental Group 15

Table 3: Comparison of Kinds of Questions Used by Students of Control and Experimental Groups 16

Table 4: Tabulation of Speech Performance of Students in the Control Group 19

Table 5: Tabulation of Speech Performance of Students in the Experimental Group 20

I. SUMMARY

This study was concerned with two experimental factors in the student teaching experiences of high school English teachers. It was intended to determine the effectiveness of a short course in speech designed for English teachers and another course in the art of questioning upon the performance of student teachers in high school English as recorded on tape. Eleven student teachers, during one semester of 1965-66, formed the control group; eleven teachers, during the semester of 1966-67, constituted the experimental group. The experimental group reviewed the fundamental principles of a speech course, to which they had been exposed as freshmen, and focused on those elements particularly applicable to the teaching of high school English. The experimental group was also exposed to a short course in the art of questioning which was based on J. P. Guilford's analysis of the human mind and its operations of diversified thinking (memory-cognition, productive thinking of a convergent and divergent nature, and evaluation). The content of both courses was included in the material of the student teaching seminars conducted weekly for an hour and a half each during the seventeen weeks of each of the two semesters of 1966-67. The control group followed the usual syllabus without special emphasis on these two factors of speech and questioning.

The students in both groups were asked to tape-record four lessons, each one-half hour long, in the teaching of one or more literary selections, prose or poetry. These tapes were analyzed in an attempt to evaluate the teachers' performance in regard to speech and the art of questioning. A statistical analysis of the results revealed no significant differences in the performance of the two groups.

Possible explanations for these results may be: (1) the complexity of the teaching situation for beginning teachers, (2) insufficient time and opportunity for training student teachers in the techniques within the allotted time, and (3) the fact that developing the art of questioning as well as the poise that is needed for speech proficiency on the part of the teacher demands prolonged practice.

Despite statistically nonsignificant results, the problem researched was worthy of investigation since it realistically explored two important aspects of successful teaching: developing students' abilities to think, aided through the teacher's intelligent questioning, and improving the teacher's classroom performance in speech and bodily movements. The subjective evaluations of the students, which reflected their interest and appreciation, confirm this conclusion.

Further investigation allowing more time and practice for developing these important skills would undoubtedly result in more positive gains. The art of teaching depends upon many variables. Careful and persistent evaluation of a teacher's performance, as suggested in this project, should result in improving that art.

II. INTRODUCTION

Educators recognize the fact that a knowledge of educational psychology and an acquaintance with teaching methods and materials, as well as a familiarity with pedagogical principles, do not guarantee an adequate application of this information to the teaching situation. Schools of professional education have, as a result, provided an opportunity for this transition to take place by having future teachers trained through supervised teaching experiences.

The investigator has been involved in this kind of work at Loyola University in Chicago for the past four years. Inspired by the interest and challenge of one of her own classroom supervisors during her varied and extensive experiences in teaching language arts on the elementary and secondary levels, she has been studying the topic of critical thinking as it relates to J. P. Guilford's structure of intellect model (11) in the context of a classroom situation (6). She welcomed this opportunity to collaborate with the Illinois State-Wide Curriculum Study Center in the Preparation of Secondary School English Teachers to extend her investigation into the related areas pertinent to teachers' art of questioning.

The purpose of one part of this research is to examine the effects of special training in the art of questioning. It fits into the recent trend in education to emphasize intellectual processes in research as well as through the practical verbalization of these processes. This, then, falls into the category of an exploratory study, although it owes a vast debt in its inception to earlier researchers.

An examination of educational literature testifies that the topic of classroom questioning is as old as education; that questions have long been used to motivate, to instruct and to evaluate; and that the importance of questioning in evoking diversified thinking has been recognized throughout the years. The extensive investigations of B. Othanel Smith (18), Arno Bellack (4), Ned Flanders (9), Hilda Taba (20), James Gallagher and Mary Jane Aschner (10) are some of the works which have given direction to the present study.

More directly this study belongs within the matrix of teaching strategies developed by Norris Sanders (15), based upon Bloom's taxonomy of educational objectives (5). Sanders' hypotheses are: 1) that after a teacher studies the taxonomy of questions, he is likely to offer his students a greater variety of intellectual experiences than he did before; 2) that students who have more practice with intellectual skills will develop them to a greater degree than those who have less practice--they may therefore engage in more effective and diversified thinking; and 3) that a greater emphasis on the teaching of the intellectual skills other than at the memory level will not decrease the amount of knowledge the student retains. The point here is not to debunk the memory level questions. Knowledge of factual information may be important in itself, for example, in familiarity with one's rights and duties, or because cultured persons are expected to possess a fund of certain information, or because facts provide the bases for generalizations, laws, and principles. But simple recall does not, at the same time, necessarily represent understanding; material learned can be rapidly forgotten, and the time spent in emphasizing this skill detracts from the employment of higher intellectual skills.

Major direction was also given to this study through the work of Gallagher and Aschner as explicated in Amidon and Hunter's The Improvement of Teaching (1). The significant features of their work on the classification of questions are, first, its indications that the kinds of questions which teachers ask evoke similar kinds of responses. That is, divergent questions cause students to engage in divergent thinking, and cognitive-memory questions evoke cognitive-memory responses. Secondly, it expresses the potentiality of questions of one category to be changed into a second category. For example, in terms of a review of Homer's Odyssey, a memory question like "What happened in the second part of the story?" might be expressed convergently as "Could the second part of the story have been written by another author, or is it entirely consistent with the first part?" or divergently as "How could the author have made the second part of the story more exciting?" or as an evaluation in "Did you like the second part of the story?".

To the researcher these studies meant that it was invaluable to pursue work in "the art of questioning." Students would benefit from the attempt to motivate the improvement of their productive intellectual skills; teachers could be aided by training in flexible transference of more mundane questioning to achieve reflective responses; and both would gain in a more diversified classroom situation.

The manner of collecting data, namely the tape-recording of student teachers' performances in actual classroom sessions with high school students, suggested that a second study dealing with another

vital topic might be conveniently built into the research design of this study. This was a short course in speech designed especially for English teachers, which was given to the experimental group. The effect of this course upon the student teachers was evaluated. The same tapes were used for the art of questioning and the speech components of this prcject.

Although the two components of the study were researched separately, they are highly related in the teaching act. Students' intellectual skills are affected not only by framing diversified questions but also by the skillful use of the voice and appropriate gestures. The teacher's effect upon classroom interaction and rapport is the result of a total presentation.

III. METHOD

A. The Nature of the Study

This study is concerned with two experimental factors in the student teaching experiences of high school English teachers:

> The effect of a short course in the art of questioning on student teachers' abilities to ask questions for evaluation and productive thinking of a convergent and divergent nature;
>
> The effect of a short speech course for teachers upon the speech performance of student teachers in secondary school English classes.

The study tests the hypothesis that a short course in the art of questioning and in speech can improve the performance in these two areas. The experiment consisted of exposing the experimental group to short courses in speech for teachers and in the art of questioning. These two short courses were a part, but only a part, of the student teaching seminars conducted weekly for an hour and a half each at the University during the seventeen weeks of each of the two semesters, 1966-67. The student teachers in the control group were not exposed to these courses; they followed the usual procedures of the Education Department planned by the Director of Student Teaching and the supervising teachers assisting him. No special emphasis was given to the topics of speech and questioning.

B. The Subjects

The study extended over a period of two years. Eleven student teachers in high school English during the first year of the study, 1965-66, comprised the control group; eleven student teachers of the

second year, 1966-67, formed the experimental group. These students were placed, according to routine procedures, in the public schools of Chicago.

The original sample was larger, but it became limited for two reasons: 1) faulty recording resulting in unintelligible tapes; 2) difficulties encountered in recording which pertained to the student teacher or to the cooperating teacher.

C. Experimental Action

1. Activities pertaining to both the control and the experimental groups

The nature and the work of the Illinois State-Wide Curriculum Study Center in the Preparation of Secondary School English Teachers (12) was explained to both the control and experimental groups.

Both groups were given, orally and in printed form, instructions for the tape recordings. All students were supplied with tapes. They were encouraged and given opportunities to practice the use of a tape recorder. Students not having access to a tape recorder in their schools were invited to use the ones provided by the University. Both groups were asked to record four (one-half hour) lessons in the teaching of one or more literary selections, prose or poetry. An entire lesson was to be recorded; that is, if a lesson was not completed during the half-hour recording, it was to be resumed the following day. This was done for the sake of validity in evaluating the kinds of questions, since thought questions are frequently asked at the end of a lesson.

In an effort to control another variable, the tape-recording of the four lessons was to be done independently of the cooperating teachers. Letters were sent to these cooperating teachers asking them to allow the student teachers to do this.

Permission was sought from proper school authorities for the tape-recording of classroom performances. Collaboration was sought, by means of letters, from cooperating teachers and from the principals for allowing the student teachers to record the four lessons. Dr. Eileen Stack, Associate Superintendent of Chicago Public Schools, was approached for permission to carry on the experiment in the Chicago schools. This permission was graciously and promptly granted.

Care was taken to keep variables, except the experimental variable, constant for both the control and the experimental groups. The same type of students participated in both years of the experiment; the arrangement of the student teaching seminars was identical; the placement and supervision of student teachers were routine. The same book, Improving Teaching, The Analysis of Classroom Interaction by Amidon and Hunter (1), was used as a textbook in the student teaching seminars of both groups.

The student teachers of both groups were visited and evaluated by members of the English, Speech, and Education Departments. Their competencies were evaluated in terms of the Qualifications Statement of the Illinois State-Wide Curriculum Study Center (12). This general Statement with its five categories helped give these students the perspective of the many factors that contribute to the art of teaching.

2. Activities of the control group

The treatment of the control group consisted of tape-recording class performance and attending the traditional weekly seminar at which time students became familiar with the program of activities outlined for them by the department under the direction of Dr. Ernest Proulx and by the individual college supervisors to whom groups were assigned.

3. Activities of the experimental group

The chief activities for the experimental group consisted of the teaching of two short courses which became a part of the weekly seminars for the student teachers. One of these was a course in the art of questioning taught by the investigator; the other was a speech course for teachers taught by Miss Catherine Geary of the Speech Department. Because beginning teachers are usually concerned about classroom discipline, the teaching of the two courses was approached with the intention of giving these teachers immediate but lasting help in this area through the proper use of voice and questioning.

D. The Course in the Art of Questioning

1. The students were introduced to J. P. Guilford's analysis of the human mind which explains learning in terms of the contents, the operations, and the products of the mind (11). Emphasis was given to mental operations in terms of the following outline:

Cognition (knowing information)

Memory (retention)

Productive thinking (from given information to some other information)

Divergent (varied, alternative outcomes, searching, changing routes, yielding multiple answers) e.g. creative performance, fluency of thinking, flexibility, originality

Convergent thinking (unique; essentially determined by information)

Evaluation (checking and rechecking information, memories, and productions; making use of feedback information and checking suitability; employing convergent and divergent thinking)

During the course, constant reference was made to this outline, since an understanding of such an analysis was basic to the study.

2. Each student was given a copy of an outline of William Shanner's A Guide to Logical Thinking, an SRA Guidance Series Booklet (16). This forty-eight page work presents topics relevant to this study: the relationship of logical thinking to language, thinking devices (generalizations and theories), "logical dividends," fallacies and propaganda techniques, and building good thinking habits.

3. Three colored filmstrips (17) were shown to the students as an orientation to the study of classroom discourse:

"Asking Questions" introduces teachers to the importance of the topic.

"Explaining" deals with such topics as what it means to explain, how explanations are categorized, and classroom examples of various types of explanations. It presents explaining in terms of being triggered by an entry, the question, and the classroom episode in terms of an antecedent and a consequent.

"The Logical Dimensions in Teaching" presents teaching as it relates to a classroom episode, namely, the opening phase, the sustaining phase, and the closing phase. Classroom episodes are verbal exchanges which may be placed in categories on the basis of entries:

defining	valuating
describing	conditional inferring
designating	explaining
stating	reporting
substituting	comparing, contrasting
classifying	opining

4. The reading of Shanner's booklet and the study of B. O. Smith's filmstrips prepared the class for a more thorough study of the use of questions as presented by Norris M. Sanders in Classroom Questions, What Kinds? (15). This paperback is the result of some five years of field development and evaluation in the public schools of Manitowac, Wisconsin. Dr. Sanders followed Benjamin S. Bloom's Taxonomy of Educational Objectives (5) in analyzing questions into the following seven categories:

> Memory: The student recalls or recognizes information.
>
> Translation: The student changes information into a different symbolic form or language.
>
> Interpretation: The student discovers relationships among facts, generalizations, definitions, values, and skills.
>
> Application: The student solves a lifelike problem that requires the identification of the issue and the selection and use of appropriate generalizations and skills.
>
> Analysis: The student solves a problem in the light of conscious knowledge of the parts and forms of thinking.
>
> Synthesis: The student solves a problem that requires original, creative thinking.
>
> Evaluation: The student makes a judgment of good or bad, right or wrong, according to standards he designates.

Dr. Sanders believes (15, p. 6) that the taxonomy of questions suggests fruitful hypotheses for educational research:

> Students who have more practice with intellectual skills will develop them to a greater degree than those who have less practice.

After a teacher studies the taxonomy, he is likely to offer his students a greater variety of intellectual experiences than he did before.

A greater emphasis on the teaching of the intellectual skills other than the memory level will not decrease the amount of knowledge the student retains.

Dr. Sanders thinks that "learning by doing" is an important idea in a prominent theory of learning and that it is given more precise meaning by the taxonomy of questions. He presents useful infcrmation regarding classroom questions: the elements of a good question, factors determining the kind of thinking that is brought about in the minds of students by any question, choosing a level of commitment, suggestions for composing questions, and mistakes to avoid in composing questions.

The use of transparencies outlining the contents of the book facilitated the study of this material. Dr. Sanders generously permitted the use of this book in whatever way might be helpful.

5. The work of Guilford, Smith, Shanner, and Sanders (described above) prepared the students for a perceptive reading of the textbook, Improving Teaching, The Analysis of Classroom Verbal Interaction (1). The authors describe teaching as an interactive process, primarily involving classroom talk. They define teaching activities as motivating, planning, informing, leading discussion, disciplining, counseling, and evaluating. Each of these activities is discussed through a series of situations on various grade levels; the classroom talk is analyzed through a classification system called the Verbal Interaction Category System (VICS) which categorizes classroom talk according to whether pupils or teachers are talking and according to whether the talk is initiatory or responsive. This category system is based upon the Flanders system of Interaction Analysis (1, p. 210).

J. P. Guilford's classification of the operations of the human mind, as interpreted by Gallagher and Aschner (1, p. 26), is used in categorizing questions into: cognitive memory, convergent, divergent, and evaluative. Students in the experimental group were given practice in identifying kinds of questions according to this model.

E. The Speech Course

1. Miss Catherine Geary reviewed and intensified the work to which these students were exposed as freshmen when they took a course in speech. Attention was given to the topics of rate, loudness, pitch, quality, diction, and general impressions gained from the voice, especially as these pertain to the teacher of English. Virgil Anderson's "Analysis of Voice and Diction" (2) was a helpful check list to enable students to become more aware of the vocal characteristics necessary to communicate both meaning and feeling in the oral presentation of literature.

2. Students were exposed to the theory of speech through lecture and through "Your Voice," an eleven-minute film from Encyclopedia Britannica Films.

3. A study was made of bodily action characteristically involved in oral presentations.

4. The students prepared, presented, and evaluated a three-to-five minute selection of prose, poetry, or drama of their own choosing, preferably pertinent to their current student teaching experiences.

5. The speech teacher visited the student teachers to observe and evaluate their total performances.

6. References of special value to the speech teacher were the works of Fairbanks (8), Monroe (14), Soper (19), and Lee (13).

F. Concluding Activities

The tape recordings of the lessons of the student teachers of both the control and experimental groups were analyzed according to the purposes of this study.

The analysis of the tape recordings was obtained in four steps. First, a transcription of each tape recording was made. Then a tentative evaluation was made using both the recording and the transcription. Third, the easier tabulations were checked by means of the transcriptions alone. Finally, the more difficult categories were reviewed, again employing both the tapes and the transcriptions.

The basis of the analysis was the structure of the intellect model designed by J. P. Guilford. More specifically, those elements of the model Guilford terms "operations" were the framework

of the evaluation. These operations are 1) cognition: the discovery, awareness, rediscovery, or recognition of information in various forms; 2) memory: the retention of material in any form; 3) convergent production: the generation of information from given information where the emphasis is on achieving unique or conventionally accepted or best outcomes; 4) divergent production: the generation of information from given information where the emphasis is on the variety of output from the same source; and 5) evaluation: the reaching of decisions or judgments covering the goodness (correctness, suitability, adequacy, desirability) of information in terms of criteria of identity, consistency, and goal satisfaction.

Additional substance was given to the criteria for evaluative purposes by the work of Gallagher and Aschner (1, p. 26). These researchers combine cognition and memory into a cognitive memory category as a modification of Guilford that this study incorporated. Questions in this category call for facts or other items which can be recalled. They are usually narrow and involve rote memory. The other categories remain the same in Gallagher and Aschner with further information given on the types of questions involved. Convergent questions, according to them, are those questions which call for analysis and integration of given and remembered data. Problem solving and reasoning are often involved here. The answers to these questions may be predictable, but convergent production questions are always broader than cognitive memory questions. Whether they are categorized as broad or narrow depends on how predictable the response is. Often the background of the pupils needs to be known in order to determine whether the questions ask for reasoning or recall. Divergent questions call for answers which are creative and imaginative. Evaluative questions deal with matters of judgment, value, and choice.

The samples themselves were accordingly characterized in this manner:

> From "The Secret Life of Walter Mitty": "What happens to shake Walter out of this dream?" -- U (Understanding: Cognitive Memory)
>
> From "The Heraldry of the Range": "Why didn't the natives kill Dr. Schweitzer?" -- C (Convergent)
>
> From <u>The Odyssey</u>: "How could the author have made the second part more exciting?" -- D (Divergent)
>
> From several discussions: "Did you like the story?" -- E (Evaluation)

Initially each question asked was categorized. Later those rated as procedural (P) or rhetorical (R) were abandoned. The rationale for this was that the study was not meant to be a mirror of the total classroom experience. A procedural question was "Did you find the page?" while a rhetorical question was one left unanswered by the students, or one used by the teacher as only a lead to a second question, which may have been merely a restatement of the first.

At one point it was decided to utilize a plus (+) and minus (-) system within each category to insure greater accuracy in the study. This too was abandoned, however, because the method was most profitable at the U (understanding) level, while the investigator was most interested in responses generated in the remaining categories.

Finally, an attempt was made to determine questioning sequences, rather than individual questions, since this appeared a better means of portraying the quality of the questioning experience. But this was eliminated because it was not a consistent element in the discussions. Many teachers unfortunately engaged in random questioning, and even those whose approach was structured departed from their pattern at times. An imbalance that could not be statistically evaluated might have resulted.

It was finally decided, then, to categorize teachers' questions which were not procedural or rhetorical on the basis of these four classifications:

U -- Understanding (Cognition, Memory)

C -- Convergent

D -- Divergent

E -- Evaluation

Mrs. Anastasia Schupp, a graduate of Michigan State University at Ann Arbor, after much study and orientation with the investigator, analyzed the teachers' questions according to the four categories. The tapes were labeled in such a way that Mrs. Schupp could not identify them as belonging to the control or the experimental group.

The tapes were also analyzed for the speech component. Miss Catherine Geary, the speech teacher, evaluated the teacher's voice in terms of articulation, pronunciation, time, pitch, intensity, vocal meaning, voice quality, language, and total effect. Miss Geary could not identify the students as belonging to either the control or the experimental group because of the

method of labeling. She could hardly be expected to remember the students in regard to grouping, since the time that elapsed between teaching the students and evaluating their performance was too great. Her evaluations were made during the summer of 1968 and the spring vacation of 1969.

The statistical analysis of the tape results was performed by Mr. Robert Cienkus and Mr. Rocco Caponigri working under the supervision of Dr. Samuel T. Mayo, Director of the Educational Research Center of Loyola University.

IV. RESULTS AND DISCUSSION

The Art of Questioning Course

Following are three tabulations of the kinds of questions used by students in the control and the experimental groups. Questions are grouped according to kind. Both groups used an overwhelmingly large number of questions of understanding (i.e., cognition, memory). Both groups used few questions other than those of understanding (i.e., convergent, divergent, evaluative).

An Analysis of Data in Tables 1, 2, and 3

The hypothesis for this section of the study was that instruction in the art of questioning would produce significant results in the types of questions which the student teachers would ask. The data was placed in a 2 x 2 contingency table. The following formula was used (Walker and Lev, Statistical Inference, p. 85, Holt Rinehart and Winston, 1953):

$$X^2 = \sum \left(\frac{fi - Fi}{Fi} \right)^2$$

The calculations of the data revealed a X^2 of 13.61. Thus, there is no correlation because this would occur by random sampling alone a little less than once in a hundred times, since the $13.61 > 6.635$. Thus, the hypothesis is rejected.

Further analysis reveals that the large X^2 is due to the large number of understanding questions. Thus, it was immaterial whether a student was in the control or the experimental group in relation to the types of questions asked.

Table 1

Tabulation of the Kinds of Questions Used by Students of the Control Group

Student	Type of Question				TOTAL
	Understanding	Convergent	Divergent	Evaluative	
1	14	1	-	1	16
2	113	-	-	1	114
3	74	4	-	9	87
4	15	5	-	7	27
5	68	-	-	2	70
6	43	2	-	-	45
7	122	-	-	2	124
8	83	3	-	15	101
9	131	7	-	13	151
10	28	-	-	-	28
11	32	-	-	1	33
TOTALS	723	22	-	51	796

N=11

Table 2

Tabulation of the Kinds of Questions Used by Students of the Experimental Group

Student	Type of Question				TOTAL
	Understanding	Convergent	Divergent	Evaluative	
1A	87	2	-	1	90
2B	122	7	-	6	135
3C	75	1	-	3	79
4D	86	-	-	3	89
5E	40	-	-	-	40
6F	83	-	-	-	83
7G	103	-	-	1	104
8H	18	-	1	3	22
9I	46	-	-	8	54
10J	75	-	-	1	76
11K	74	-	1	1	76
TOTALS	809	10	2	27	848

N=11

Table 3

Comparison of Kinds of Questions Used by Students of Control and Experimental Groups

Students	CONTROL GROUP		EXPERIMENTAL GROUP	
	Type of Question		Type of Question	
	Understanding	Convergent, Divergent, Evaluative	Understanding	Convergent, Divergent, Evaluative
1, 1A	14	2	87	3
2, 2B	113	1	122	13
3, 3C	74	13	75	4
4, 4D	15	12	86	3
5, 5E	68	2	40	0
6, 6F	43	2	83	0
7, 7G	122	2	103	1
8, 8H	83	18	18	4
9, 9I	131	20	46	8
10,10J	28	0	75	1
11,11K	32	1	74	2
TOTAL	723	73	809	39
	796		848	

N=11

The next, and the less important, interpretation of the data dealt with the number of questions asked by each group. The following formula was used (Guilford, Fundamental Statistics in Psychology and Education, McGraw-Hill, 1965, p. 183):

$$t = \frac{M_1 - M_2}{\sqrt{\left(\frac{\sum x_1^2 + \sum x_2^2}{N_1 + N_2 - 2}\right)\left(\frac{N_1 + N_2}{N_1 N_2}\right)}}$$

The calculation of this data revealed that there is no significant difference between the control and the experimental groups in the total number of questions asked. A t score of .35 was obtained which did not meet the required 2.23 to be significant at the .05 level.

The Speech Course

Following is a check list which was used and a tabulation of the results of the speech performance of the student teachers as identified on the tapes. The scale suggested at the end of the check list was used to evaluate each of the characteristics enumerated, and the total score was found.

For the data which are shown in Tables 4 and 5, a t score of .0152 was obtained for the mean difference of 4.33. This was not significant at the .05 level, since the 2.23 requirement was not met.

Subjective evaluations made by the student teachers of the experimental group revealed that they found the work in the two areas interesting and meaningful.

EVALUATION OF CONNECTED SPEECH

	Articulation	1	2	3	4	5	6	7
General errors. . .	vowel errors. . .				Consonant errors. . . .			
	Pronunciation	1	2	3	4	5	6	7
Phonetic errors	Misplaced stress							
Regional dialect.	Foreign dialect							
	Time	1	2	3	4	5	6	7
Rate too fast	Rate too slow							
Monotonous.	Patterned	Jerky						
Phonations too short. . .	long. . . .	Pauses too short. . .					long. . .	
Phrases too short	long. . .							
	Pitch	1	2	3	4	5	6	7
Level too low	Level too high							
Monotonous.	Patterned	Affected.						
	Intensity	1	2	3	4	5	6	7
Level inadequate	Level excessive							
Monotonous.	Patterned	Too variable.						
	Vocal Meaning	1	2	3	4	5	6	7
Phrasing faulty	Intonation faulty							
Emphasis faulty	Generally unexpressive. . . .							

	Voice Quality	1	2	3	4	5	6	7
Nasal	Harsh	Breathy				Hoarse		
	Language	1	2	3	4	5	6	7
Grammatically correct	Accuracy							
Simplicity	Appropriateness	Imagery						

(This section on language: Monroe, Alan H. and Douglas Ehninger, Principles and Types of Speech, Scott Foresman and Co., Glenview, Illinois, 1967.)

	Total Effect	1	2	3	4	5	6	7

Fairbanks, Grant. Voice and Articulation Drill Book (second edition), Harper & Brothers, New York, 1961.

Interpret scale points from 1 to 7 as Inferior, Very Poor, Poor, Average, Good, Very Good, Superior.

Table 4

Tabulation of Speech Performance of Students in the Control Group

Student	Articulation	Pronunciation	Time	Pitch	Intensity	Vocal Meaning	Voice Quality	Language	Total Effect	Total Score
1	5	5	6	5	5	6	7	5½	5	49½
2	6	6	6	6	6	6	6	6	6	54
3	4	4½	3½	4½	4½	4	5	4½	4	38½
4	6	6	6	6	6	6	6	6	6	54
5	5	5	4	4	3	4	5	4½	5	39½
6	3	4	3	3	4	4	5	4	5	35
7	6	6	5	5	5	5	7	5½	6	50½
8	5	5	4	4	4	4	6	4	4	40
9	4	4	3	3	3	4	4	4	5	34
10	5	5	5	5	5	5	5	5	5	45
11	4	4	4	4	4	4	4	4	4	36

N=11
M=43.10
SD= 7.26

Table 5

Tabulation of Speech Performance of Students in the Experimental Group

Student	Articu-lation	Pronun-ciation	Time	Pitch	Intensity	Vocal Meaning	Voice Quality	Language	Total Effect	Total Score
1A	4	4	6	6	5	5	6	5	5	46
2B	4	4	3	3	3	3½	2	3½	4	30
3C	5	6	4	5	5	5	6	5	4	45
4D	4	4	3	3	3	4	3	3	3	30
5E	6	7	5	4	5	6	5	6	6	50
6F	5	5	4	3	3	4	4	4	4	36
7G	5	5	4	4	3	4	4	4	5	38
8H	3	3	5	5	5	5	7	5	4	42
9I	3	6	3	5	5	6	7	5	6	46
10J	3½	3½	4	4½	4½	4½	4½	4½	4½	38
11K	3	3	2	3	2	3½	3	3	3	25½

N=11
M=38.77
SD= 7.52

V. CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The experimental research and the teacher preparation program developed pursuant to this study can be further evaluated in terms of the following considerations.

This project aimed to improve the abilities of student teachers in their use of speech and questions, testing the effect of such instruction; it also helped to realistically point out the complexity of the position of a beginning teacher. Complicating the project was the use of a tape recorder which, in most cases, was an unfamiliar instrument, evidenced by the fact that a number of tapes were unusable due to faulty recording despite the fact that demonstrations of the use and practice in operating a tape recorder were given as a part of the training program. Some cooperating teachers thought that asking student teachers to do this kind of tape-recording was imposing too great a burden on them.

In regard to the experimental action it was found that more adequate controls could have been established in the selection of literary types for discussion. A more precise decision on poetry or prose, fiction or non-fiction, for example, could have eliminated discrepancies in the tabulations. Those teachers choosing essays seem to have elicited more productive kinds of thinking than those using short stories, for example. Similarly, some teachers chose several selections of poetry to compose a single class unit and thus affected their performance, to a degree, by increasing the possibility of asking significant questions in light of the constantly changing themes under discussion.

As far as the categorization of the teachers' questions is concerned, the process necessarily had to proceed to some extent on a subjective level. There was no way to ascertain the exact amount of knowledge their students brought to the classroom either through life experiences or through previous classroom discussion, which would significantly affect the quality of their performance and the quality of the questions asked. A seemingly complex question might actually have rated a "U" (understanding) only because some small clue provided in the tape suggested that the matter had been resolved earlier by the teacher who now merely was asking the student to recall an earlier conclusion. At the same time, a relatively simple question might have rated a "C" (convergent) because of the evident slowness of the students in determining the proper answer. The speech teacher, likewise, came to the conclusion that a teacher's performance was enhanced by previous experience with a literary selection, which fact may have affected the ratings disproportionately. There is a possibility, therefore, that too much or too little was taken for granted in many cases, but again this was unavoidable.

Perhaps the most significant reservation here is the fact that there was no way to discriminate in the tabulation between an extended, deliberate attempt to encourage productive thinking and the accidental utterance of a quality question. One teacher may have structured her entire class around certain critical questions. These questions may have been only two in number in themselves, while employing a series of supportive questions. The problem is that these supporting questions may have rated only a "U," so in the total tabulation only two important questions would appear to have been asked. On the other hand, a second teacher may have spent an entire class in asking "U" questions at random, and then accidentally asked two significant questions in a row--"Was Mr. Walter Mitty an average person?" and "What makes people respond or behave as they do?" The two selections at face value therefore rank on par with each other even though the one presentation was fairly sophisticated and the other rather obscured what was important.

Perhaps the most important observation to be noted in evaluating the statistical results of the study is the fact that both instructors, in the speech and in the art of questioning courses, were dissatisfied with the limited amount of time that was allotted to them, a factor beyond their control. The poor statistical results could be attributed to this factor.

A possible solution to this problem, in planning a teacher training program, might be an earlier inauguration of a program which would give the student adequate exposure to these important topics of speech and the art of questioning followed by sufficient practice in real or simulated classroom situations prior to formal student teaching experiences. If this instruction would be distributed over a longer period of time, students might apply this knowledge to their own study techniques and more readily make a transition when teaching.

The utilization of tape recordings in this project suggests that this technique can be advantageous to teachers in observing and evaluating their classroom experiences in regard to kinds of thinking to be elicited; structuring questioning sequences; phrasing of questions to ensure clarity, cues, methods of reinforcement; methods of eliciting answers from unresponsive classes; and, finally, methods of generating significant questions from the students themselves. The art of motivating interest and establishing classroom rapport is dependent upon many variables. Careful and persistent evaluation of a teacher's own performance can result in developing that art.

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